



N A R U C  
National Association of Regulatory Utility Commissioners

April 20, 2011

Honorable Lee Hamilton  
Lieutenant General Brent Scowcroft  
Co-Chairmen  
Blue Ribbon Commission on America's  
Nuclear Future  
1000 Independence Ave. SW  
Washington, DC 20585

**Re: Comments on "What We Heard"**

Dear Co-Chairman Hamilton and  
Co-Chairman Scowcroft:

The Blue Ribbon Commission heard exhaustive testimony at numerous meetings here in the United States and visited other countries facing similar circumstances having to do with management and disposal of used nuclear fuel and high-level radioactive waste. The staff did an excellent job in the *What We Heard* report of distilling the highlights of the testimony and spirited discussions with the Commission in the report. The Commission always set aside time for public comments and listened well.

As a participant in the Transportation and Storage Subcommittee meeting in Wiscasset and frequent attendee at other BRC meetings I welcome the invitation to add further comments which in many cases are affirming the summary in the report or bring in a different angle for the Commission to consider as you prepare the Draft Report this summer. While I do serve on the staff of the National Association of Regulatory Utility Commissioners (NARUC), the views expressed in the attached comments are my own, as I note in the attached.

Thank you for the opportunity to provide these comments.

Brian O'Connell, P.E.

Attachment

## **Some Comments on the BRC “What We Heard” Report**

**By**

**Brian O’Connell, P.E.**

### **1. Program Governance and Execution**

We agree that there were expressions of widespread erosions of trust in the ability of the federal government to meet the obligations to dispose of used/spent fuel and high-level waste (we agree with your shorthand and will simply refer to it as “waste” in these comments.) We don’t think the “large” size of DOE was a major factor, as most of the program management was conducted by a dedicated, single-purpose organization (OCRWM) with support from the National Laboratories and various support contractors.

With hindsight we can now question the requirement of NWPA (Sec. 302) for DOE and owners of spent fuel to enter into contracts within 180 days of enactment that obligated DOE to begin disposal in the repository no later than January 31, 1998. While that date sixteen years in the future may have seemed ample at the time, we now know some of the steps needed to enable meeting that schedule included:

- Development of site selection criteria and conducting a site selection process
- Establishment of a radiation standard and other licensing regulations for a facility unlike any that existed in the world (which took 23 years with litigation)
- Preparation of design and license application
- A general lack of cooperation from the State of Nevada which strongly opposed the repository, yet the State had authority to grant (or deny) certain permits
- A period of three (and possibly four) years for the NRC to review and issue the license
- Construction would proceed in stages for both surface handling and preparation facilities as well as the underground facilities that was estimated to take 5-7 years
- As an attempt to increase public confidence in waste transportation, it was decided to build a 300 mile rail line connecting to the main line through rugged terrain

Further, there was a consistent pattern of Congress cutting the budget that made scheduling one of the areas of the “persistent inability to meet legislated milestones” pointed out in “What We Heard “(WWH.) No one will likely dispute that the habitual cuts were a result of coordinated actions by the Nevada congressional delegation. That was a kind of reverse pork barrel, i.e. resulting in collateral economic loss in the State for a federal project the State opposed.

Looking back now, we could see that it was important to have the fee payments contractual arrangements in place after 180 days, but it was unfortunate to lock in the initial repository opening date—and later a companion acceptance priority ranking (APR) report which allocated

waste acceptance schedules and amounts for owners—which later would trigger the litigation when those dates passed without performance or renegotiation.

We agree with the notion of used fuel management program being assigned to a new entity as described in page 6 with the features and authorities listed. As thorough as the draft bill introduced by former Senator Voinovich was it would require a period of transition and “pre-commissioning” that we are not altogether certain how that would be conducted with what resources. When asked during the February 1, 2011 BRC meeting on governance, one of the panelists was asked about management of the waste program while the Administration and Congress shaped and passed enabling legislation to redirect the program and create the new waste management entity, his response was that there is no on/off switch and that he had “no idea how many people are left in the Department of Energy working on this.” It was unfortunate that he and perhaps others did not realize that, with the de facto disestablishment of OCRWM in 2010, there is no one managing the waste program, aside from a residual cell within the Office of General Counsel involving standard contracts and litigation over the government’s breach of those contracts. This was illustrated in the discussions over the status of the Nuclear Waste Fund on the following day when there were different amounts referred to by both panelists and Members of the Commission as to the balance in the Fund. This may be due to the fact that DOE ceased publishing the monthly reports on the Fund in January 2010. (NARUC has requested that they be reinstituted.)

We found the discussions on governance and finance on February 1,2 to be revealing of how different people can seem to agree that a new organization might be more successful at managing a new waste program yet have so many different views on what its mission would be and how it should be shaped. We look forward to the Commission’s recommendations.

*Explanatory note: These comments frequently refer to “we” have positions or views on one point or another. The “we” is intended to represent State public utility commissioners who are elected or appointed by their States. They are often represented in matters of nuclear waste policy by the National Association of Regulatory Utility Commissioners, known as NARUC. I have been the principal staff member at NARUC on these issues since 1999. So, while the opinions here are mine, they reflect the views of NARUC and State utility regulators and the ratepayers who have been and continue to bear the financial burden through their electric bills from the utilities which pay the fees to the Nuclear Waste Fund for the safe, permanent disposal of spent fuel as directed in the NWPA.*

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## 2. Nuclear Waste Fee and Fund

Since NARUC focused most of its attention in its testimony before the Commission on May 25, 2010 on the Nuclear Waste Fund and the need for fundamental reform if it is to serve as the primary financing means to dispose of commercial spent fuel, we have deep interests in this aspect of the report and the recommendations we hope the Commission will produce.

The report said that many witnesses urged that the Fund continue to be restricted to waste disposal activities only. NARUC has maintained that position because (a) the NWPA set up the Fund for the purpose of developing and implementing a disposal program and (b) if there was to be a proposal to provide a central storage program there should be some estimate of how much waste would be stored for what duration and at what cost in order to see what effect that added cost would have on the fee, if it is proposed to be financed by the Fund. DOE has maintained that the interim storage program under Subtitle B of NWPA (which was to have a separate fee) has lapsed and that the MRS alternative was impractical now with the restriction that construction of an MRS facility may not begin until the NRC has issued a license for a repository.

Apparently, it is unrealistic to suggest that an interim storage program be financed from the same source that, in the absence of such a program, will eventually bear most of the added storage costs incurred by the standard contract holders (the nuclear utilities). Whether through settlement agreements or court damage awards, those costs are being paid from the Judgment Fund in the U.S. Treasury once the Department of Justice approves payment. The Judgment Fund is a direct appropriation fund that is not pro-actively managed and the Department of Energy, by which the judgments and settlements are incurred is not required to reimburse the Judgment Fund. Our sense is that there is no organization charged with seeking to reduce the liability by possible economies of consolidated storage compared with the ongoing judgments and settlements at 72 storage sites.

As to whether the Fund should be used to support a reprocessing/recycling development, we would simply ask what the purpose of reprocessing is if it is not economic in comparison to continued use of fresh fuel? At the introduction of the former GNEP program some proponents of reprocessing spoke of one of the benefits of reprocessing was to be a reduction in volume of waste requiring geologic disposal and thus fewer repositories would be required. No proof was ever presented.

Let it be clearly stated that the NARUC position remains that the ratepayers who have benefitted from nuclear energy should pay for the *disposal* of the waste resulting from its production. Further, we understand that the duration of a repository's costs may continue decades past the time when the waste being disposed is removed from reactors that no longer produce electricity and the owners cease to be required to pay fees to the Fund. Thus, it was always expected that money in the Fund would accumulate as revenue exceeded expenses in the early stages of the project, but the total revenue would have to last through the final

stages. So, building up a surplus in the early years that would sustain the project in later years was expected (and was factored into most of the annual fee adequacy assessments done by DOE.)

What we did not expect is that Congress would cast an eye on the growth in the corpus of the Fund as – for whatever reason—appropriations habitually lagged behind fee revenue. Although other explanations are given, it is our belief that the annual surplus of fees over appropriations that gets deposited in the Fund as well as the so-called “investment returns,” sometimes referred to as interest, are not cash in either case but instead the \$25 or so billion is really a collection of IOU’s whose repayment is reliant on future Congresses. The status of the balance in the Fund continues to be “murky” and is easily misunderstood.

So, in 2009, when DOE proposed a FY 2010 budget request of zero dollars for the Yucca Mountain repository project which was to be terminated and the Blue Ribbon Commission was to develop a new post-Yucca disposal or other waste management program that would not likely make its way into a budget request—we assumed—before FY 2013 or 2014, we thought it would be appropriate to suggest a fee suspension. In fact, a Senate report on the FY 2010 said, “The Committee expects the Secretary to suspend the fees” to the Fund. The Office of Management and Budget declared in a Statement of Administration Policy that “all fees are essential” and DOE denied our request. As a result, this year DOE forecasts fee revenue for the Fund will be \$770 million and no appropriations will be made. Coupled with investment returns credited to the Fund the reported balance in the Fund could gain an apparent two billion dollars this year.

So, when NARUC called for suspension of the fees it was not that we did not think the disposal program that the Commission may recommend and the Administration, the Congress and, in some way, the public support will need every bit of that two billion dollars and more. What we wanted to bring to a halt the ‘shell game’ in which the fee revenue gets spent on other things and the stack of IOU’s grows.

The first bullet on page 7 on significant frustration seems to suggest that the frustration has been over the fact that annual appropriations have always been less than fee revenue collected. We do not believe that the repository program was intended to be a “pay-as-you-go” arrangement. During the site characterization phase the Fund was expected to accumulate a balance in the corpus which would build to sufficient level to sustain the program during the construction, transportation and emplacement phases when cash requirements would exceed relatively stable fee revenue. Indeed, with the 2007 Fee Adequacy Assessment, which went to extreme variations of 28 economic assumptions and commercial/government cost share, 18 of those cases projected a surplus by year 2119 when the repository program was completed (as scoped and estimated in the 2007 Total Systems Life Cycle Cost report.) NARUC is not frustrated that the appropriations do not meet annual fee revenue, rather it is our lack of faith that the annual interest and the growing NWF balance may not be available when needed.

To foreshadow how difficult it may be to secure the Nuclear Waste Fund for a future waste management program, the Voinovich bill that would create the Nuclear Fuel Management Corporation and would transfer the Nuclear Waste Fund in two stages. It would transfer the fee revenue for the "operating account" of the Corporation at some later point. The corpus, however, would be transferred to a "capital reserve" account as an "unfunded asset." While not studied in depth, it seems as though the transfer is the same stack of IOU's. It suggests that there is a lack of confidence that Congress would hand over \$25 billion upon creation of the Corporation.

As an aside, think of the positive effect on recruiting top executives to add the leadership continuity that many feel a new "FedCorp" could bring if the corporation were formed with an endowment of \$25 billion and an annual revenue stream of nearly \$2 billion in fees and interest. Conversely, if all that included in the startup is the annual revenue, maybe the candidates will be less attracted on the concern that the commitment to waste disposal is still not evident.

### 3. Approach to Siting

Others familiar with the history of the site search that resulted in Yucca Mountain being selected to be the only site to be fully “characterized” have conflicting views on the extent to which that site was considered more or less suitable in terms of sound science than the other two finalists recommend by President Reagan in 1986. We do know that the 1987 amendment to subject just Yucca to further scrutiny and characterization was an abrupt change to the process directed by the NWPA. Whether or not that was politically motivated or not could be debated, but most people in Nevada seem convinced that the Yucca selection was politically motivated and people from outside the State acknowledge that the Nevadans have some basis to be bitter.

The State of Nevada had vowed to stop or impede the Yucca repository by all means at its disposal. While the NWPA had many provisions for encouraging consultation, cooperation and even financial benefits with the prospective host State and any affected Indian tribes and local units of government, the State fought hard and seems to have succeeded. It seems unfortunate that the repository license review process was curtailed before the regulatory body with the authority, qualified professional personnel and independence was able to provide the answer of whether building a repository at Yucca Mountain is grounded in sound science and meets regulatory requirements to protect public health and the environment.

Many can agree that the process for screening and selecting candidate sites for a permanent repository needs to be handled in a manner that seems less prone to being called politically motivated. The Commission heard many call for a more transparent process, but DOE seems to have attempted to be transparent but found itself in adversarial relations with the State. There certainly was no shortage of public meetings, posting of documents on the DOE website, environmental impact statements and independent oversight by the Nuclear Waste Technical Review Board, GAO and Congress.

We do not see appreciable benefit to the suggestion that site search and development be handled by a separate organization from the organization that later builds and operates the repository.

We have been impressed and wish that the site selection process successes in Finland and Sweden could be realized in the United States. Yes, there are institutional and social differences as well as a difference in scale, but there has to be some hope that more of a partnership relationship can be considered in this country.

As the organization often recognized as a watchdog for the Nuclear Waste Fund, on behalf of ratepayers, that does not mean that we oppose reasonable expenditures from the Fund. We support the use of the Fund to provide benefits, such as in Subtitle F of NWPA, as appropriate. We adopted a resolution in 2002 supporting Nye County, Nevada in the county’s representation of the burden that the Yucca Mountain repository would impose on the county.

There are similarities in seeking sites for central or regional interim storage facilities that involve transparency, partnership relationships and benefits. Our observation from following the difficulties of the PFS storage facility proposed in Utah is that there is skepticism that temporary storage will become permanent. So, if the BRC recommends an interim storage plan, it must, in our view, be accompanied by a credible pursuit of a permanent, as was recommended in the 2001 joint Harvard University-University of Tokyo report *Interim Storage of Spent Nuclear Fuel*.

#### 4. Reactors and Fuel Cycle Technologies

Agree that:

- There seems to be consensus that reprocessing is likely to be more expensive than the present once-through cycle.
- Reprocessing is probably decades away from being ready to be ready at a production scale.
- Even if we were to reprocess all commercial spent fuel, there would still be a requirement for at least one geologic repository for:
  - Defense waste that does not lend itself to reprocessing
  - Residual waste from reprocessing

What we have yet to see detailed discussion of is how the plant owners would be influenced to use reprocessed fuel instead of fresh fuel in their reactors. It would seem that the price would have to be less than fresh fuel and there would need to be no extensive adjustment to reactor operations. It would seem that if using reprocessed fuel were economically superior to fresh fuel then reprocessing would flourish in the marketplace. In other words, unless the reprocessed fuel is functionally equivalent and cost advantageous to fresh fuel, the reactor owners are unlikely to use it in their reactors. They are independent private enterprises not instruments of public policy. They may be influenced by government incentives but they have yet to be brought into the discussion, partly because no one can provide an estimated reprocessed fuel delivered price over the relatively distant horizon.

## 5. Transport of Used/Spent Fuel and High-Level Wastes

The Commission heard various presenters refer to distrust and suggestions that research be done into social science aspects of nuclear waste. Nowhere is the matter of trust better illustrated than in the transport of nuclear waste. The facts are that nuclear waste can be and has been safely shipped for several decades. The public often does not know that and seems predisposed to believe the risk is much greater than the record indicates.

In the Yucca Mountain debate in and preceding the 2002 site approval, it was often remarked that—in the public’s mind—transportation was the Achilles heel. The State of Nevada knew that and would give credibly seeming presentations to audiences in other States that could be challenged. A representative of Clark County, Nevada in 2004 said this to one such group:

“They are going to truck nuclear waste every day for nearly 40 years. The idea Of railways also doesn’t work because most of the railway in the United States are over 100 years old. The old railways won’t pass the inspections necessary to carry nuclear waste.”

So, even though she knew that DOE was planning to ship waste to Yucca by “mostly rail,” here was a government official theorizing her own scenarios. Another Clark County consultant distributed elaborate maps showing “impact zones” suggestive of danger from rail shipments transiting to Yucca along the rail line that parallels the heavily populated Las Vegas Strip (on a route DOE intended to avoid in favor of a eastern route) while asserting that the Las Vegas Valley route would be used for between 7 and 83 (sic) percent of the shipments.

Yucca Mountain proponents grew fatigued at these attempts to undermine public confidence in waste transportation by these unsubstantiated claims, as well as by the even more inflammatory stunt of an organization that towed a cardboard mockup of a supposed waste shipping cask behind an SUV that was labeled “Mobile Chernobyl.” Proponents saw the need for some more fact-based “public education” on waste transportation safety but agreed there would be a “trust problem” if any of the following were to take the lead:

- Nuclear industry—might not be trusted since it would be self-serving
- DOE—would also not be trusted in Nevada, DOE was also reluctant to be a proponent
- NRC—avoids situations that place the regulator in role of an advocate

The report mentioned the successful WIPP campaigns featuring close cooperation between DOE and the involved States. DOE also deserves credit in working with regional State groups, including Nevada, on Yucca Mountain transportation planning, which will be needed again in central interim storage, reprocessing and disposal scenarios.

The State transportation planners for the Yucca transportation planning seemed frustrated by the lack of route information from DOE. DOE maintained that it would be premature to select

routes until the repository site was finally approved and there would be ample time to select routes before shipments were scheduled. Some suspected the ambiguity was purposeful so as to not instill transportation fears along routing corridors. Further, DOE maintained that if the shipments to Yucca were going to be mostly by rail as many preferred, the railroads would have latitude to choose best routing and DOE would be powerless to proscribe or prohibit route choices.

So, it seemed that the general public wanted the spent fuel to be removed from reactor storage sites, yet the public was fearful of transporting it. During the 2002 debate in Congress of the Yucca site approval, a congressman from New York expressed his view, "Nuclear waste is unsafe where it is, it is unsafe where it is going (Yucca) and it is unsafe to send it there."

There is a reference in the second bullet to security threats having changed following 9/11. We do not know that the threat has changed or whether it is appropriate to mention in the report.

## 6. Storage of Used/Spent Nuclear Fuel and High-level Wastes

We totally agree that in many of the 72 present spent fuel storage sites removal and transport of spent fuel to a central interim storage facility makes good sense on so many levels, not the least being the likely savings to the taxpayers through consolidation since the federal government is bound to be found liable for the extended storage costs resulting from the government's breach of its disposal contracts.

From what we understand of the HOSS proposal, there may be some instances where it might be appropriate, but in general we want the existing contracts –that *remove* spent fuel –honored and not shift to perpetual on-site storage policy. Leaving spent fuel at present reactor storage sites does not fulfill the President's statement that, "My Administration is committed to using this advanced knowledge to meet the Government's obligation to dispose of our Nation's used nuclear material," in the Memorandum to the Secretary calling for the Commission to be formed (emphasis added.)

The last bullet on page 13 seems to suggest that there are equal benefits (listed) for interim storage at present storage sites or at a centralized location. We disagree.

- There are contracts that provide for the removal of spent fuel from reactor sites. Continued storage there will cost the government more and would be counter to the agreement in the NWPA and those contracts.
- A central interim storage facility would be better sited and designed from the start to meet the latest safety and security requirements.

Subsequent to the issuance of the WWH report, the events at Fukushima Daichi nuclear complex have stirred fears in this country as well, including some concern for risk of fire in cooling pools if there were a loss of circulation or loss of cooling water. We support the efforts by the NRC to systematically gather the facts about the events in Japan and with the US plant operators review circumstances in this country on a plant by plant basis. Many things are different in this country, such as the risk of tsunamis and requirements for defense in depth backup systems. We know that Congress wants to protect the public, but hope that members will have the patience to await a comprehensive review such as the NRC is pursuing before they propose corrective actions that may be well intended but which might not pass muster in a cost/benefit analysis.

## 7. Disposal System for High-Level Waste

We agree that the federal government has a moral and legal obligation to meet its commitments to remove used/spent fuel and high-level wastes. We believe that as it became apparent that the 1998 waste disposal date set in NWPA and in contracts that the disposal service *provider* (DOE) might have sought to ameliorate the burden and damages to its *customers* caused by failing to meet the schedule—not just by days or weeks but by years. Instead, DOE found itself in court with a parade of cases brought by utilities resulting in either damage awards or settlement agreements paid from the Judgment Fund with no punitive effect on DOE. It seemed to us and at least one nuclear industry leader said it that the utilities were not seeking money as much as they wanted removal of the spent fuel as the contracts promised.

We also agree that getting the disposal program back on track should be the highest priority of the Commission. We felt that could have been to allow the Yucca Mountain licensing process run its course, but that option does not seem to be available unless the Congress or the courts intervene.

As to disposal development we feel there are some improvements needed.

1. The million year radiation standard is unrealistic.
2. We are unsure of the requirement for retrievability.
3. The *One Step at a Time* report of the National Research Council recommends a prototype repository demonstration.
4. The surface facilities at the repository should be equipped to receive and transfer all waste forms into waste packages. The mid-design shift by DOE to “TAD” canisters moved some of the handling problems back to the points of origin.
5. Although we consider that DOE attempted to conduct an open process for the site characterization and license application stages of the Yucca Mountain project, perhaps a more formal relationship should be employed in the next repository development.

We do not have much information on deep boreholes, but we gather the premise to be that the technology is or soon will be on hand to be used for nuclear waste disposal and that waste emplacement will be at such a depth as to not lead to further contact with the human environment. Regardless of development of another geologic repository, it would seem that a prototype demonstration of deep borehole disposal should be proposed, first with a simulated waste package and then with a live load.

On the question of whether defense and commercial waste can be disposed of the same repository or in separate facilities has at least two considerations: Can they be co-located and is there a benefit in disposing them together or apart and unless the separate facilities are developed so as to be ready at the same time, is there an equitable way to ensure they will be in operation at nearly the same time?

In the Yucca Mountain case, we saw long and sharply divided views from EPA and NRC on development of the radiation standard. It seems that there were disagreements over both the fundamental science as well as means of demonstrating compliance. EPA seemed more concerned with legal factors and displayed less concern with meeting reasonable schedules. All things considered, we feel that the NRC should be responsible for establishing the radiation standard for the next repository. NRC should seek input from EPA, the National Research Council and other radiation authorities. The regulation itself should have a plain language companion. Few beyond the small circle of specialists understand what a person-rem is.

If there is a review of the classification of radioactive waste, one type of waste that is in limbo is the greater than class C (GTCC) waste from nuclear power plants that until now, the NRC said requires geologic disposal but DOE said was not included in the defined types of waste to be disposed of under NWPA.

While there will be some pressure to move expeditiously on the search for and evaluation of repository sites, time must necessarily be available to permit the States and local communities where candidate sites are being considered to learn for themselves what is being proposed and be given a chance to express their position. One can only wonder what effect the strong and (apparently) successful “fight” by the State of Nevada to defeat the Yucca Mountain repository will have demonized the repository wherever it may be proposed.